TP-LINK®

User Guide

MC100CM
MC110CS
Fast Ethernet Media Converter

MC111CS
MC112CS
WDM Fast Ethernet Media Converter

REV2.1.0

7106505160

http://www.tp-link.com

FCC STATEMENT

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions:

1) This device may not cause harmful interference.
2) This device must accept any interference received, including interference that may cause undesired operation.

Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

CE Mark Warning

This is a class A product. In a domestic environment, this product may cause radio interference, in which case the user may be required to take adequate measures.

Продукт сертифіковано згідно с правилами системи УкрСЕПРО на відповідність вимогам нормативних документів та вимогам, що передбачені чинними законодавчими актами України.

Safety Information

- When product has power button, the power button is one of the way to shut off the product; When there is no power button, the only way to completely shut off power is to disconnect the product or the power adapter from the power source.
- Don’t disassemble the product, or make repairs yourself. You run the risk of electric shock and voiding the limited warranty. If you need service, please contact us.
- Avoid water and wet locations.

安全諮詢及注意事項

●請使用原裝電源供應器或只能按照本產品注明的電源類型使用本產品。

●清潔本產品之前請先拔掉電源線。請勿使用液體、噴霧清潔劑或濕布進行清潔。

●注意防潮，請勿將水或其他液體潑灑到本產品上。

●插槽與開口供通風使用，以確保本產品的操作可靠並防止過熱，請勿堵塞或覆蓋開口。

●請勿將本產品置放於靠近熱源的地方。除非有正常的通風，否則不可放在密閉位置中。

●請不要私自打開機殼，不要嘗試自行維修本產品，請由授權的專業人士進行此項工作。

此為甲類資訊技術設備，于居住環境中使用時，可能會造成射頻擾動，在此種情況下，使用者會被要求採取某些適當的對策。

This product can be used in the following countries:

AT	BG	BY	CA	CZ	DE	DK	EE
ES	FI	FR	GB	GR	HU	IE	IT
LT	LV	MT	NL	NO	PL	PT	RO
RU	SE	SK	TR	UA	US		

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Package contents

The following items should be found in your package:

- One Converter
- One AC-DC Power Adapter (DC9V/600mA)
- One User Guide
- One Purchasing Guide

Note:

Make sure that the package contains the above items. If any of the listed items are damaged or missing, please contact your distributor.

Chapter 1 Introduction

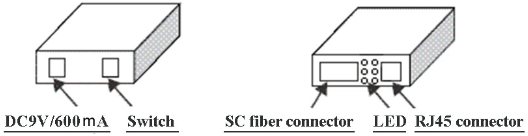
Thank you for choosing the **MC100CM/MC110CS Fast Ethernet Media Converters** or the **MC111CS/MC112CS WDM Fast Ethernet Media Converters**!

1.1 Overview of the Converter

MC100CM and MC110CS are Fast Ethernet Media Converters. MC111CS and MC112CS, the WDM Fast Ethernet Media Converters, adopt WDM (Wavelength Division Multiplexing) technology which increases the information carrying capacity of fiber via transmitting and receiving multiplex signals at different wavelengths on a single strand cable. You can save half cabling cost when you use MC111CS and MC112CS instead of your original dual fiber converter.

The converter mediates between a 10/100Base-TX segment and a 100Base-FX segment. It is primarily designed for large, higher speed/bandwidth demanding workgroups that require expansion of the Fast Ethernet network.

The converter also features the LFP (Link Fault Pass through) function, and for its procedure illustrates, please refer to the section 1.5.3.



1.2 Conventions

The Converter mentioned in this guide stands for Fast Ethernet Media Converters or the WDM Fast Ethernet Media Converters without any explanations.

The TP port mentioned in this User Manual stands for the TX port without any explanations.

Note:

The four converters are sharing this User Guide. Their differences are in the table in Section 1.4.

1.3 Features

- Complies with 802.3u 10/100Base-TX, 100Base-FX standards.
- Provides one SC fiber connector and one RJ-45 connector.
- Supports auto negotiation of duplex mode on TP port.
- Supports auto negotiation of 10/100Mbps and auto MDI/MDI-X for TP port.
- Supports Link Fault Pass Through function and Far End Fault function.
- Extends fiber distance up to 2km for multi-mode fiber and 20km for single-mode fiber.
- Easy-to-view LED indicators provide status to monitor network activity easily.
- External power supply.

1.4 Connectors and Network Cables Supported

The connectors and network cables supported by the converter are listed as follows.

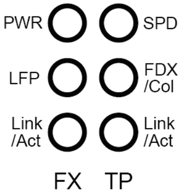
- **Connectors**: RJ-45, SC.
- **Network Cables**: Cat.5 Twisted-Pair (below abbreviated as TP), 9/125um Single-mode fiber and 50/125, 62.5/125um Multi-mode fiber.

Model NO.	Interface	Transmission Distance	Transmission Media	Output Center Wavelength
MC100CM	RJ45--SC	2km	Multi-mode Fiber, TP	1310nm
MC110CS	RJ45--SC	20km	Single-mode Fiber, TP	1310nm
MC111CS	RJ45--SC	20km	Single-mode Fiber, TP	1550nmTX 1310nmRX
MC112CS	RJ45--SC	20km	Single-mode Fiber, TP	1310nmTX 1550nmRX

1.5 Appearance Indication

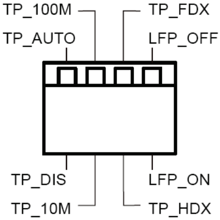
1.5.1 LED Indicators

The converter has LED indicators which can provide a real-time report. When you take a look at these indicators, you will know what's happening on your network. For details, please refer to the table as shown below.



Name		Status	Indication
PWR		On	Power on.
		Off	Power off.
LFP		On	The Link Fault Pass Through function enable.
		Off	The Link Fault Pass Through function disable.
FX	Link/Act	On	There's a valid link.
		Flashing	The converter is receiving or transmitting data from the fiber optic connector.
		Off	There's no valid link.
TP	SPD	On	The TP port is connected to 100Base-Tx
		Off	The TP port is connected to 10Base-Tx device or no connection.
	FDX/Col	On	The TP port is operating in Full-Duplex.
		Flashing	There's a collision.
		Off	The TP port is operating in Half-Duplex mode.
	Link/Act	On	There's a valid link.
		Flashing	The converter is receiving or transmitting data from the TP port.
		Off	There's no connection on the TP port.

1.5.2 Switch



- **TP_AUTO**: The TP port operates in Auto-Negotiation mode;
- **TP_DIS**: The TP port operates in FORCE mode;
- **TP_100M**: The TP port operates in 100Base-Tx;
- **TP_10M**: The TP port operates in 10Base-T mode;
- **TP_FDX**: The TP port operates in Full-Duplex mode;
- **TP_HDX**: The TP port operates in Half-Duplex mode;
- **LFP_OFF**: The Link Fault Pass Through function is disabled;
- **LFP_ON**: The Link Fault Pass Through function is enabled.

Connect different devices, we suggest leaving the switches like these as shown below, otherwise the Media Converter may not work normally.

The Mode Of The Device	Switch
TP:AUTO; LFP ON	TP_AUTO, TP_100M, TP_FDX, LFP_ON
TP:AUTO; LFP OFF	TP_AUTO, TP_100M, TP_FDX, LFP_OFF
TP:FORCE,100M,FULL; LFP ON	TP_DIS, TP_100M, TP_FDX, LFP_ON
TP:FORCE,100M,FULL; LFP OFF	TP_DIS, TP_100M, TP_FDX, LFP_OFF
TP:FORCE,100M, HALF; LFP ON	(TP_DIS or TP_AUTO), TP_100M, TP_HDX, LFP_ON
TP:FORCE,100M, HALF; LFP OFF	(TP_DIS or TP_AUTO), TP_100M, TP_HDX, LFP_OFF
TP:FORCE,10M,FULL; LFP ON	TP_DIS, TP_10M, TP_FDX, LFP_ON
TP:FORCE,10M,FULL; LFP OFF	TP_DIS, TP_10M, TP_FDX, LFP_OFF
TP:FORCE,10M, HALF; LFP ON	(TP_DIS or TP_AUTO), TP_10M, TP_HDX, LFP_ON
TP:FORCE,10M, HALF; LFP OFF	(TP_DIS or TP_AUTO), TP_10M, TP_HDX, LFP_OFF

Note:

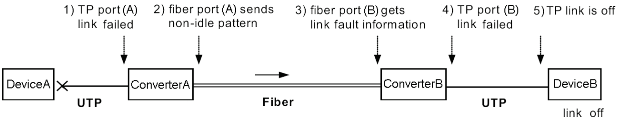
1) We suggest leaving the switches on TP_AUTO, TP_100M, TP_FDX, and LFP_ON, because this configuration is suitable for lots of situations.

2) You have to reset the converter after configuring the switches.

1.5.3 Link Fault Pass Through Function

In common situations, when one side of the link fails, the other side continues transmitting packets, and waiting for a response that never arrives from the disconnected side.

With the Link Fault Pass Through function enabled (optional with switch LFP), TP port and FX port of the same converter will inform each other the fault link status so that when one side of the link fails, the other side will force the link to shut down as soon as noticed. The procedure will be illustrated as shown below.



The procedure of link fault pass through

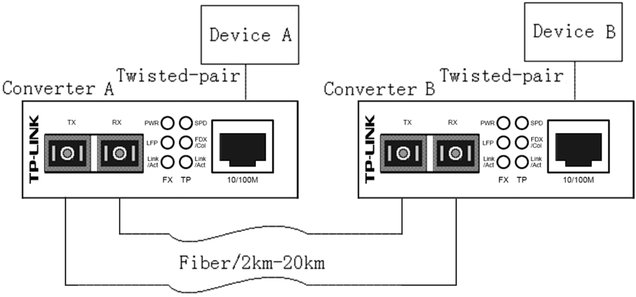
If link fail happens on TP port (A), the FX port (A) sends non-idle pattern to notice the FX port (B). The FX port (B) then forces its TP port (B) to link failed after receiving the non-idle pattern. Link status LED will also be off for both Converters and Devices as shown below.

	Link LED		
Device A	Off		
Device B	Off		
	FX_LFP	**FX_Link/Act**	**TP_Link/Act**
Converter A	On	Off	Off
Converter B	On	Off	Off

Chapter 2 Installation Guide

2.1 Fast Ethernet Media Converter

1. The SC fiber connector of MC100CM transmits/receives data by 1310nm short wave laser on multi-mode fiber.
2. The SC fiber connector of MC110CS transmits/receives data by 1310nm short wave laser on single-mode fiber.



Transmits and receives data on different fibers

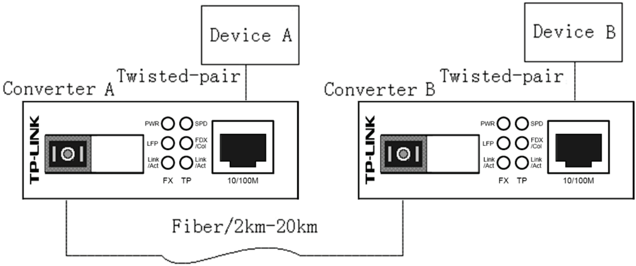
Note:

You have to use either two MC100CM connectors or two MC110CS connectors to cooperate.

2.2 WDM Fast Ethernet Media Converter

1. The SC fiber connector of MC111CS transmits data by 1550nm short wave laser while receives data by 1310nm short wave laser on one single-mode fiber.

2. The SC fiber connector of MC112CS transmits data by 1310nm short wave laser while receives data by 1550nm short wave laser on one single-mode fiber.



Transmits and receives data on the same fiber

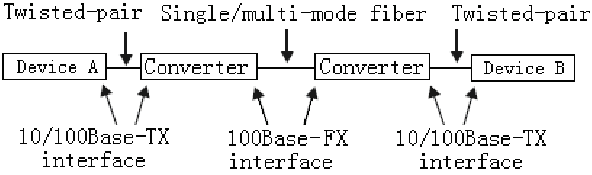
Note:

You have to use MC111CS and MC112CS at the same time to cooperate.

Chapter 3 Configuration

In order to effectively expand a Fast Ethernet network, you can use the converter like the following examples:

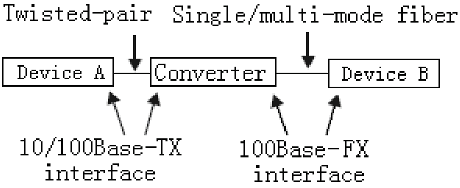
1. Place two converters back to back between the following end devices.



Note:

You should use two MC100CM Media Converters or two MC110CS Media Converters, or one MC111CS and one MC112CS to expand your network. Error will occur when you use other ways.

2. Another effective application is to place one converter directly between a 10/100Base-TX device and a 100Base-FX device.



3.1 Installation Procedure

Use a fiber cable to connect two converters, or connect a converter with a 100Base-FX Device.

1. Connection of a Converter and a 10/100Base-TX Device (HUB or Switch).
   - Make sure that the length of the Cat.5 twisted pair cable between the 10/100Base-TX device and the converter is less than 100 meters.
   - Connect one end of the Cat.5 twisted pair cable to the RJ45 jack on the converter and the other end of the cable to the RJ45 jack on the 10/100Base-TX device.
2. Connection of two Converters or a Converter and a 100Base-FX Device.
   - Use a SC fiber cable to connect the two Converters' SC connector or the SC connecter of a Converter and a 100Base-FX Device.
3. Turn on the power.

Appendix: Specifications

Standard	IEEE 802.3 / IEEE 802.3u	
Connector	1 SC fiber optic; 1 RJ-45 jack	
Max. Distance	Cat.5 Twisted Pair:100m	
	Multi-mode Fiber Optic: 2km	
	Single-mode Fiber Optic: 20km	
Temperature	Operation: 0ºC ～ 40ºC	
	Storage: -40ºC ～ 70ºC	
Humidity	Storage: 5% ～ 90% RH Non-condensing	
	Working: 10% ～ 90% RH Non-condensing	